CLAIMS

What is claimed is:

1. A crossover and manifold assembly adapted for conducting a fluid through a vehicle engine, the conduit and manifold assembly comprising:

a crossover having a passage formed therein extending between a first end and a second end thereof ; and

a manifold joined to the first and second ends of the crossover, the manifold having first and second openings, the first and second openings defining first and second inner surfaces, respectively;

wherein at least one of the first end and the second end of the crossover is disposed within one of the first and the second openings of the manifold such that the at least one of the first end and the second end of the crossover completely covers the one of the first and the second inner surfaces of the one of the first and the second openings thereby preventing fluid from contacting the one of the first and second inner surfaces of the one of the first and second openings of the manifold.

2. The crossover and manifold assembly according to Claim 1, wherein the manifold is joined to the crossover by a mechanical bond.

3. The crossover and manifold assembly according to Claim 1, wherein the manifold is joined to the crossover by forming a portion of the manifold about a portion of the crossover.

4. The crossover and manifold assembly according to Claim 1, wherein the crossover is joined to the manifold by overmolding a portion of the manifold about a portion of the crossover.

5. The crossover and manifold assembly according to Claim 1, wherein both of the first end and the second end of the crossover are disposed within the first and the second openings of the manifold such that both of the first end and the second end of the crossover completely cover the first and the second inner surfaces of the first and the second openings.

6. The crossover and manifold assembly according to Claim 1, wherein the crossover is permanently joined to the manifold.

7. The crossover and manifold assembly according to Claim 1, wherein the crossover is non-permanently joined to the manifold.

8. The crossover and manifold assembly according to Claim 7, wherein the one of the first end and the second end of crossover includes one of a rail and a groove, and the one of the first and the second openings within which the one of the first and second ends is disposed includes the other one of the rail and the groove whereby the crossover is joined to the manifold by slidably moving at least one of the crossover and the manifold with respect to each other.

9. The crossover and manifold assembly according to Claim 1, wherein the crossover and the manifold are formed from different materials.

10. The crossover and manifold assembly according to Claim 9, wherein the crossover is formed from a metal material and the manifold is formed from a non-metal material.

11. The crossover and manifold assembly according to Claim 1, wherein the crossover and the manifold are formed from similar materials.

12. A crossover and manifold assembly adapted for use in a vehicle engine comprising:

a crossover formed from a metal material and having a passage formed therein extending between a first end and a second end thereof ; and

a manifold formed from a non-metal material and joined to the first and second ends of the crossover, the manifold having first and second openings, the first and second openings defining first and second inner surfaces, respectively;

wherein the first end and the second end of the crossover is disposed within the first and the second openings, respectively, of the manifold such that the first end and the second end of the crossover completely covers the respective first and the second inner surfaces of the first and the second openings thereby preventing fluid from contacting the first and second inner surfaces of the first and second openings of the manifold.

13. The crossover and manifold assembly according to Claim 12, wherein the manifold is joined to the crossover by a mechanical bond.

14. The crossover and manifold assembly according to Claim 12, wherein the crossover is joined to the manifold by overmolding a portion of the manifold about a portion of the crossover.

15. The crossover and manifold assembly according to Claim 12, wherein the crossover is permanently joined to the manifold.

16. The crossover and manifold assembly according to Claim 12, wherein the crossover is non-permanently joined to the manifold.

17. The crossover and manifold assembly according to Claim 16, wherein the first end and the second end of crossover includes one of a rail and a groove, and the first and the second openings within which the first and second ends are disposed includes the other one of the rail and the groove whereby the crossover is joined to the manifold by slidably moving at least one of the crossover and the manifold with respect to each other.

18. A method of manufacturing a crossover and manifold assembly for conducting a fluid through a vehicle engine, the method comprising the steps of:

a. providing a crossover having a passage formed therein extending between a first end and a second end thereof;

b. providing a manifold having first and second openings, the first and second openings defining first and second inner surfaces, respectively; and

c. joining the manifold to the first and second ends of the crossover, wherein at least one of the first end and the second end of the crossover is disposed within one of the first and the second openings of the manifold such that the at least one of the first end and the second end of the crossover completely covers the one of the first and the second inner surfaces of the one of the first and the second openings thereby preventing fluid from contacting the one of the first and second inner surfaces of the one of the first and second openings of the manifold.

19. The method according to Claim 18, wherein step (c) includes joining the manifold to the first and second ends of the crossover by forming the manifold about a portion of the crossover.

20. The method according to Claim 18, wherein step (c) includes joining the manifold to the first and second ends of the crossover by mechanically bonding the manifold the crossover.

21. The method according to Claim 18, wherein step (c) includes joining the manifold to the first and second ends of the crossover by overmolding a portion of the manifold about a portion of the crossover.

22. The method according to Claim 18, wherein both of the first end and the second end of the crossover are disposed within the first and the second openings of the manifold such that both of the first end and the second end of the crossover completely cover the first and the second inner surfaces of the first and the second openings.

23. The method according to Claim 18, wherein in step (c) the crossover is non-permanently joined to the manifold.

24. The method according to Claim 23, wherein the one of the first end and the second end of the crossover includes one of a rail and a groove, and the one of the first and the second openings within which the one of the first and second ends are disposed include the other one of the rail and the groove whereby the crossover is joined to the manifold by slidably moving at least one of the crossover and the manifold with respect to each other.

25. The method according to Claim 18, wherein in step (c) the crossover is permanently joined to the manifold.

26. The method according to Claim 18, wherein the crossover and the manifold are formed from different materials.

27. The method according to Claim 18, wherein the crossover is formed from a metal material and the manifold is formed from a non-metal material.

28. The method according to Claim 18, wherein the crossover and the manifold are formed from similar materials.